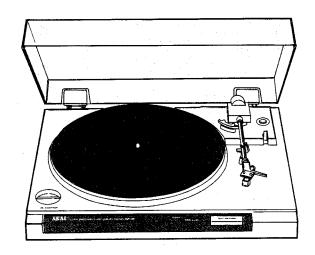
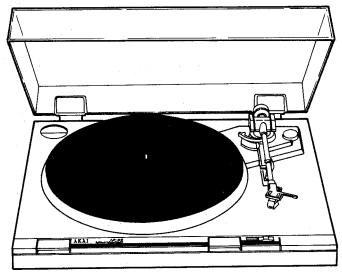
# AKAI SERVICE MANUAL





**AUTO RETURN TURN TABLE** 

MODELAP-B1/C

**DIRECT DRIVE TURN TABLE** 

MODELAP-D2/C



# AUTO RETURN TURNTABLE $\text{model} \mathbf{AP\text{-}B1/C}$ DIRECT DRIVE TURNTABLE

MODELAP-D2/C

### THIS MANUAL IS APPLICABLE TO BOTH SILVER AND PEARL SHADOW PANEL MODELS

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SECTION	2	MODEL AP-D2/C SERVICE MANUAL	13
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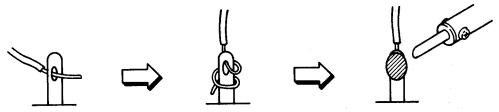
### SAFETY INSTRUCTIONS

### SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for  $\boxed{C}$  or  $\boxed{A}$ , specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

### PRECAUTIONS DURING SERVICING

- 1. Parts identified by the A symbol parts are critical for safety.
  - Replace only with parts number specified.
- 2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
  - Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
- 3. Use specified in ternal wiring. Note especially:
  - 1) Wires covered with PVC tubing
  - 2) Double insulated wires
  - 3) High voltage leads
- 4. Use specified insulating materials for hazardous live parts. Note especially:
  - 1) Insulation Tape
  - 2) PVC tubing
  - 3) Spacers (Insulating Barriers)
  - 4) Insulation sheets for transistors
  - 5) Plastic screws for fixing microswitch (especially in turntable)
- 5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



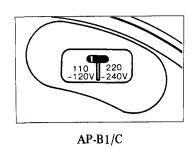
- 6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
- 7. Check that replaced wires do not contact sharp edged or pointed parts.
- 8. Also check areas surrounding repaired locations.
- 9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.
- 10. Voltage Conversion

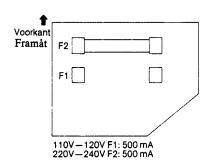
Models for Canada, USA, Europe, UK and Australia are not equipped with this facility.

Each unit is preset at the factory depending on its destination, but some units can be converted to 110-120V or to 220-240V as required.

If voltage change is necessary, this can be accomplished as follows:

- 1.) Disconnect the power cord.
- 2.) Remove the botton cover.
- 3) AP-B1/C: move the VOLTAGE SELECTOR located on the cabinet under the platter, with a screwdriver so that the marker is below the Voltage for your area.
- 4) AP-D2/C: remove the existing Line Voltage Fuse and insert the required Line Voltage Fuse in the proper fuse holder according to the printed instructions.





AP-D2/C



SECTION 1

# SERVICE MANUAL

# MODEL AP-B1/C

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For ba	asic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAI	۷,

# I. SPECIFICATIONS

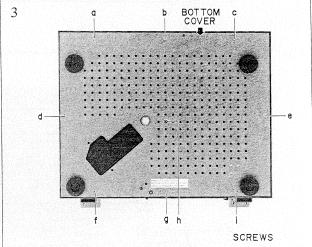
TURN TABLE (PLATTER)	Aluminum alloy diecast
DRIVE SYSTEM	Belt Drive, Auto return
MOTOR	DC Motor
SPEED	33-1/3, 45 rpm
WOW AND FLUTTER	0.05% (WRMS)
RUMBLE	65 dB (DIN-B)
TONE ARM	Static balanced strait type
EFFECTIVE ARM LENGTH	215 mm
STYLUS PRESSURE ADJUSTMENT RANGE	0 to 2.5 grams
APPLICABLE CARTRIDGE WEIGHT	5 to 9 grams
ARM LIFTER	Oil Damped
	15 mm
OVERHANG	=
CARTRIDGE	MM (Moving Magnet) Type, (Replacement Stylus PC-82)
	(Model AP-B1 does not include cartridge.)
OUTPUT VOLTAGE	2.5 mV (DIN)
CHANNEL SEPARATION	More than 20 dB
OPTIMAL STYLUS PRESSURE	2 grams
POWER REQUIREMENTS	120V, 60 Hz for USA and Canada
	220V, 50 Hz for Europe except UK
	240V, 50 Hz for UK and Australia
	110-120V/220-240V, 50/60 Hz switchable for other countries
POWER CONSUMPTION	U/T, CSA, AAL 3W
DIMENSIONS	440 (W) × 107 (H) × 345 (D) mm
	$(17.3 \times 4.2 \times 13.6 \text{ inches})$
WEIGHT	
WEIGHT	3.4 kg (7.5 lbs)

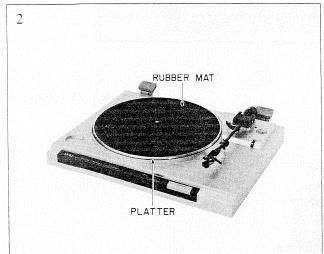
<sup>\*</sup> For improvement purposes, specifications and design are subject to change without notice.

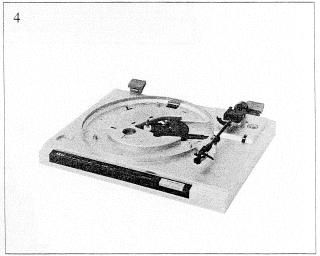
### II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.









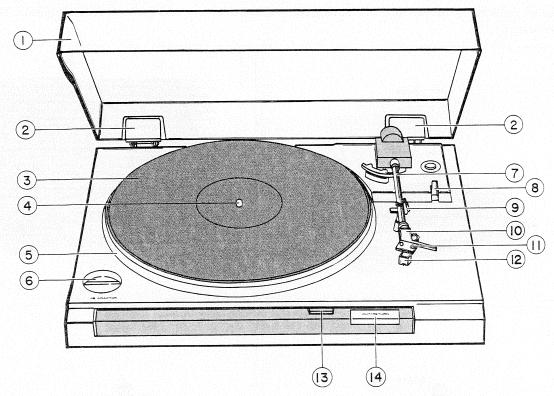


Fig. 3-1 CONTROLS (1)

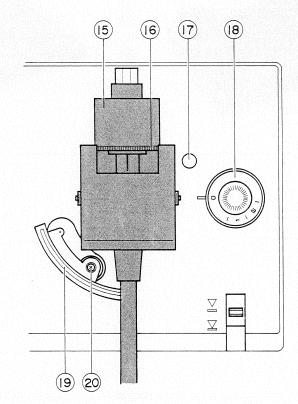


Fig. 3-2 CONTROLS (2)

- 1. DUST COVER
- 2. HINGE
- 3. RABBER MAT
- 4. SPINDLE
- 5. PLATTER
- 6. 45rpm ADAPTER HOLDER
- 7. TONE ARM
- 8. CUEING LEVER
- 9. TONE ARM REST
- 10. HEAD SHELL

- 11. CARTRIDGE RE-SETTING SCREWS
- 12. CARTRIDGE (AP-B1C ONLY)
- 13. SPEED SELECTOR
- 14. CUT/RÉTURN SWITCH
- 15. MAIN WEIGHT
- 16. STYLUS PRESSURE SCALE RING
- 17. AUTO-RETURN ADJUSTMENT SCREW
- 18. ANTISKATING ADJUSTER
- 19. TONE ARM LIFTER
- 20. TONE ARM LIFTER HIGHT ADJ. SCREW

### IV. PRINCIPAL PARTS LOCATION

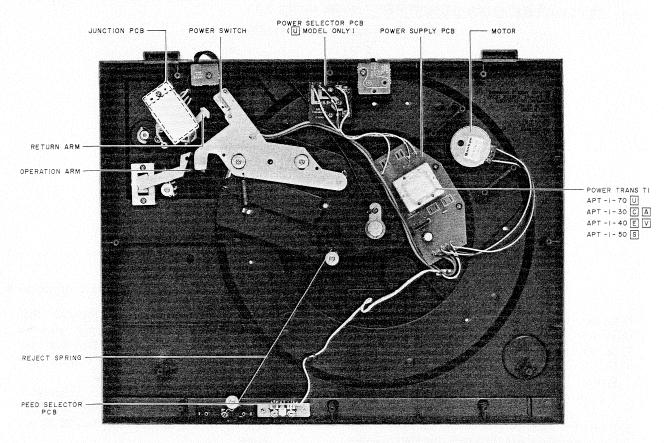


Fig. 4-1 Principal Parts Location (Bottom View)

# 5-1. STYLUS PRESSURE ADJUSTMENT (Refer to Fig. 5-1)

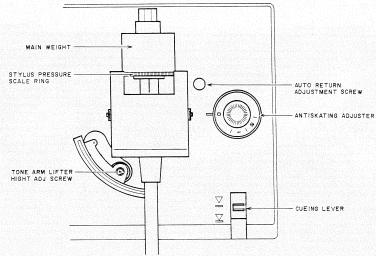


Fig. 5-1 Stylus Pressure Adjustment

- 1) Connect the Power Cord.
- 2) Turn the ANTISKATING Adjuster to 0.
- 3) Set the Cueing lever to  $\square$ .
- 4) Unlock the Tone Arm and bring it towards the Platter.
  - \* Remove the Stylus Guard being careful not to damage the Stylus.
- 5) With the Tone Arm held midway between the Tone Arm Rest and the rim of the Platter, adjust the Main Weight until the Tone Arm is in perfect horizontal balance.
- 6) Without moving the Main Weight, rotate the Stylus Pressure Scale Ring only to match the "0" mark with the mark on the weight shaft.
- 7) Lock the Tone Arm is place and rotate the Main Weight counterclockwise, as viewed from the front (the Stylus Pressure Scale Ring will move with it), until the desired Stylus Pressure Scale indication is at the mark on the shaft.

The range of adjustment is from 0 to 2.5 grams.

- \* For AP-B1C only: The recommended Stylus Pressure for the cartridge supplied, PC-82 is 2 grams.
- 8) Set the ANTISKATING adjuster to the corresponding Stylus Pressure.

# 5-2. OVERHANG ADJUSTMENT (Refer to Fig. 5-2)

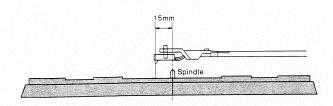


Fig. 5-2 Overhang Adjustment

# 5-3. TONE ARM LIFTER HEIGHT ADJUSTMENT (Refer to Figs. 5-1 & 5-3)

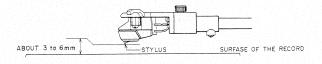


Fig. 5-3 Tone Arm Lifter Height Adjustment

The distance between the turntable Spindle and the Stylus when the Tone Arm is centered over the Platter is known as the overhang.

Different cartridges require different overhang adjustments

- 1) Disconnect the Power Cord.
- 2) Center the Tone Arm over the Platter.
- 3) Adjust the cartridge position in the shell so that the Stylus position is 15mm from the Spindle.
  - \* The cartridge position can be adjusted by resetting the screws in the shell.

With the Tone Arm in the up-position, the Stylus should be 3 to 6 mm above the surface of the record. If it is not, increase the height by adjusting the Tone Arm Lifter Height Adjustment Screw.

Clockwise: Down Counterclockwise: Up

## VI. MECHANISM ADJUSTMENT

# 6-1. AUTO-RETURN ADJUSTMENT (Refer to Fig. 6-1)

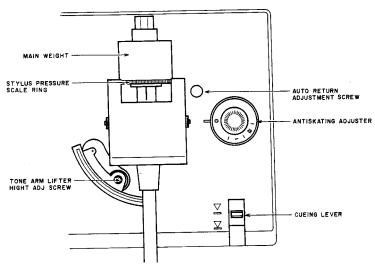


Fig. 6-1

If the Tone Arm does not return automatically to the Tone Arm Rest at the end of the play back, or does so during playback:

- 1) Leave the Power Cord connected.
- 2) Adjust the Auto-Return Adjustment Screw.

  Turn clockwise: If the Tone Arm returns before the end of record.
  - Turn counterclockwise: If the Tone Arm does not return at the end of record.
- \* Do not turn the Screw counterclockwise too much.

### NOTE:

AKAI recommends that a record be placed on the Platter and auto-return operation be carried out after each adjustment to confirm that the adjustment is successful.

### 6-2. RETURN ARM POSITION ADJUSTMENT

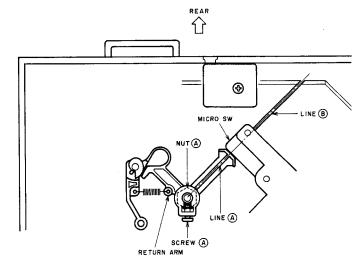


Fig. 6-2

(In case, the TONE ARM was replaced or the proper AUTO RETURN position could not obtained in item 6-1.)

- 1) Lock the TONE ARM on the ARM REST.
- 2) Confirm that RETURN ARM is installed all the may in to the nut (A).
- 3) May loosen the screw (A) a little and turn the RE TURN ARM so that the line (A) on the RETURN ARM is aligned with the line (B) on the cabinet as shown in Fig. 6-2, then tighten the screw (A).
- 4) Next, excute an AUTO RETURN operation and confirm that the AUTO RETURN position is proper.
  - Do the fine adjustment in item 6-1 if necessary.
- 5) Paint-lock the screw (A) after the adjustment.

# VII. ELECTRICAL ADJUSTMENT

### 7-1. SPEED ADJUSTMENT

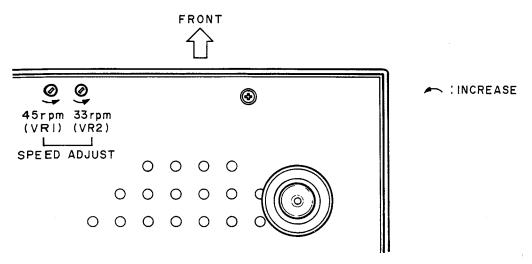


Fig. 7-1 SPEED ADJUSTMENT

- 1) Set the Speed Selector to 33-1/3 rpm.
- 2) Playback the Test Record (33-1/3 rpm, 1000Hz).
- 3) Adjust VR2 so that the speed is 1000±5Hz.
- 4) Set the Speed Selector 45 rpm.
- 5) Playback the Test Record (45rpm, 1000Hz).
- 6) Adjust VR1 so that the speed is 1000±5Hz.

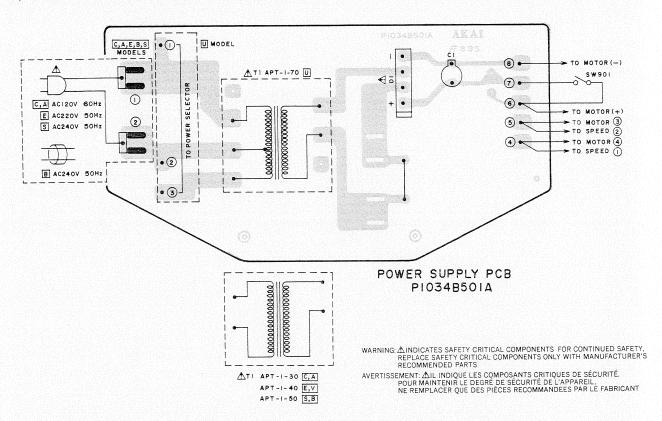
# VIII. CLASSIFICATION OF VARIOUS P.C. BOARDS

### 8-1. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

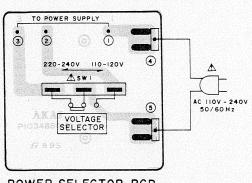
P.C BOARD TITLE	P.C BOARD NUMBER	NOTES
POWER SUPPLY P.C BOARD	P1034B501A	
POWER SELECTOR P.C BOARD	P1034B501D	<b>U</b> only
SPEED SELECTOR P.C BOARD	P1034B501C	
JUNCTION P.C BOARD	P1034B501B	

### 8-2. COMPOSITION OF VARIOUS P.C BOARDS

1) POWER SUPPLY P.C BOARD P1034B501A



### 2) POWER SELECTOR P.C BOARD P1034B501D

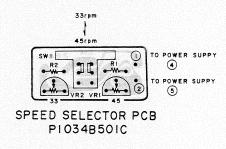


POWER SELECTOR PCB PI034B50ID UMODEL ONLY

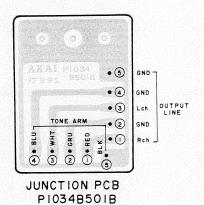
WARNING:  $\triangle$ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ÂLI INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

### 3) SPEED SELECTOR P.C BOARD P1034B501C



### 4) JUNCTION P.C BOARD P1034B501B





### **SECTION 2**

# SERVICE MANUAL

# MODEL AP-D2/C

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For basic adjustment, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

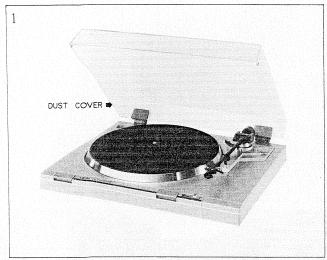
# I. SPECIFICATIONS

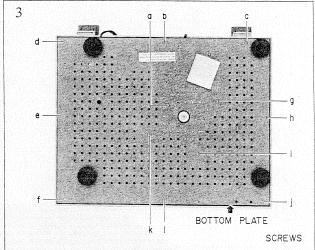
TURN TABLE	Aluminum alloy diecast
DRIVE SYSTEM & MECHANISM	FG Servo Direct Drive Automatic
MOTOR	DC Servo Motor
SPEED	33-1/3 rpm, 45 rpm
SPEED DEVIATION	±0.5%
WOW AND FLUTTER	0.03% (W RMS)
RUMBLE	73 dB (DIN B)
TONE ARM	Static Balanced Type
EFFECTIVE ARM LENGTH	220 mm
STYLUS PRESSURE ADJUSTMENT RANGE	0 to 2.5 grams
APPLICABLE CARTRIDGE WEIGHT	3 to 7 grams
ARM LIFTER	Oil damped
OVERHANG	15 mm
CARTRIDGE	MM (Moving Magnet) Type (Replacement Stylus RS-85)
	(Model AP-D2 does not include cartridge.)
OPTIMAL STYLUS PRESSURE	2.0 grams
OUTPUT VOLTAGE	2.5 mV (DIN)
CHANNEL SEPARATION	20 dB
POWER REQUIREMENTS	120V, 60 Hz for USA and Canada
	220V, 50 Hz for Europe except UK
	240V, 50 Hz for UK and Australia
	110-120V/220-240V, 50/60 Hz switchable for other countries
POWER CONSUMPTION	5W (U, C, A)
DIMENSIONS	440 (W) × 96 (H) × 359 (D) mm
	$(17.3 \times 3.8 \times 14.1 \text{ inches})$
WEIGHT	5.1 kg (11 lbs)

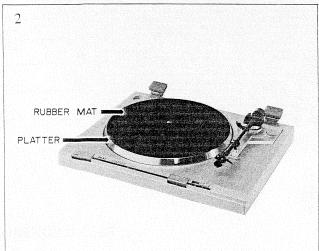
<sup>\*</sup> For improvement purposes, specifications and design are subject to change without notice.

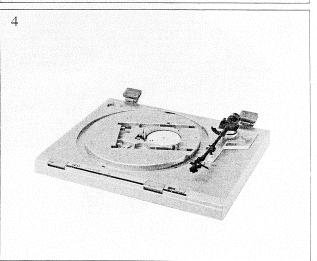
# II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.









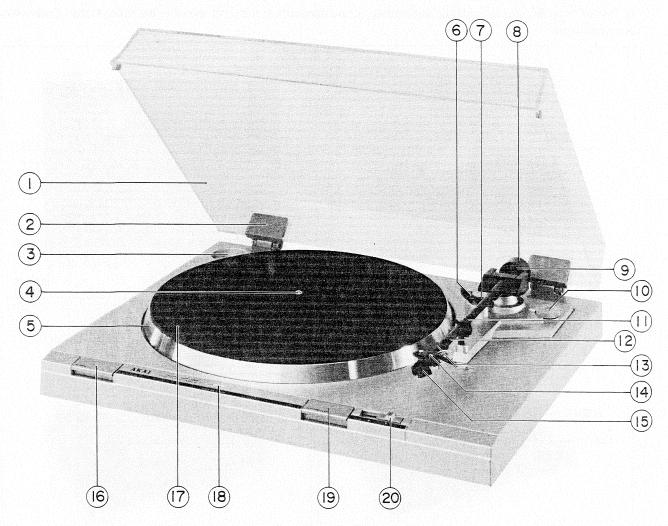


Fig. 3-1 CONTROLS

- DUST COVER
- HINGE
- 45 rpm ADAPTER HOLDER 3.
- SPINDLE
- PLATTER
- 6. TONE ARM LIFTER
- 7. TONE ARM LIFTER HEIGHT ADJUSTMENT SCREW
- 8. MAIN WEIGHT
- 9. STYLUS PRESSURE SCALE RING
- 10. ANTISKATING ADJUSTER

- TONE ARM CLAMP 11.
- 12. TONE ARM
- HEAD SHELL 13.
- CARTRIDGE RE-SETTING SCREWS 14.
- 15. CARTRIDGE (AP-D2C ONLY) 16. SPEED SELECTOR (45/33)
- RABBER MAT 17.
- 18. SERVO LOCK INDICATOR
- 19. CUT/RETURN BOTTON
- 20. CUE LEVER

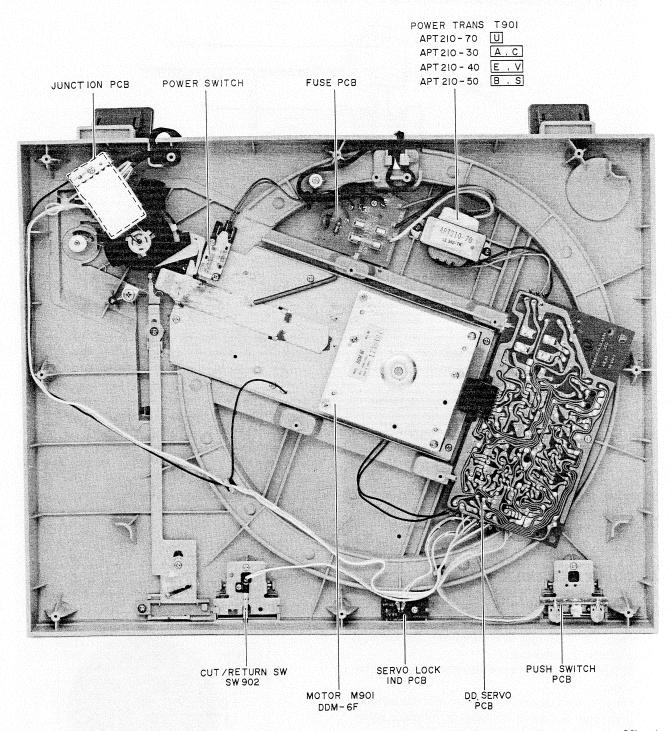


Fig. 4-1 Principal Parts Location (Bottom View)

### MECHANICAL ADJUSTMENT

### 5-1. STYLUS PRESSURE ADJUSTMENT (Refer to Fig. 5-1)

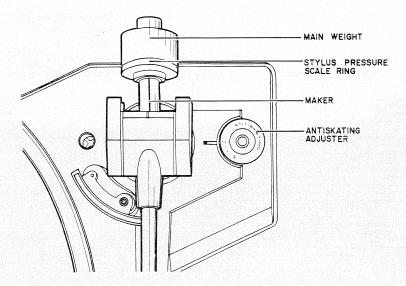


Fig. 5-1 Stylus Pressure Adjustment

- 1) Disconnect the Power Cord.
- 2) Set the ANTISKATING Adjuster to 0.
- 3) Unlock the Tone Arm and bring it towards the
  - \* Remote the Stylus Guard being careful not to damage the stylus.
- 4) With the Tone Arm held midway between the Tone Arm Rest and the rim of the Platter, adjust the Main Weight until the Tone Arm is in perfect horizontal balance.
- 5) Without moving the Main Weight, rotate the Stylus Pressure Scale Ring only to match the "0" mark with the mark on the weight shaft.

- 6) Return the Tone Arm to the Tone Arm Rest.
- 7) Lock the Tone Arm in place and rotate the Main Weight counterclockwise, as viewed from the front (the Stylus Pressure Scale Ring will move with it), until the desired Stylus Pressure Scale indication is at the mark on the shaft.

The range of adjustment is from 0 to 2.5 grams.

- \* For AP-D2C only: The recommended stylus pressure for the cartridge supplied, RS-85 is 2 grams.
- 8) Set the ANTISKATING adjuster to the corresponding stylus pressure.

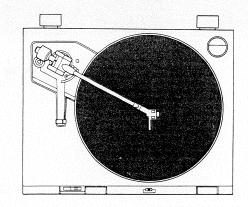
### 5-2. OVERHANG ADJUSTMENT (Refer to Fig. 5-2)

The distance between the Spindle and the Stylus when the Tone Arm is centered over the Platter is known as the overhang.

Different cartridges require different overhang adjust-

For your convenience, the Rubber Mat has indicator grooves at the center to facilitate overhang adjust-

- 1) Disconnect the Power Cord.
- 2) Center the Tone Arm over the Platter.
- 3) Adjust the cartridge so that the Stylus position is even with the Groove for Overhang Adjustment (middle groove ring).
  - \* The cartridge position can be adjusted by resetting the Cartridge Re-setting Screws in the shell.



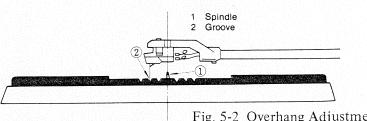


Fig. 5-2 Overhang Adjustment

### 5-3. TONE ARM LIFTER HEIGHT ADJUSTMENT (Refer to Fig. 5-3)

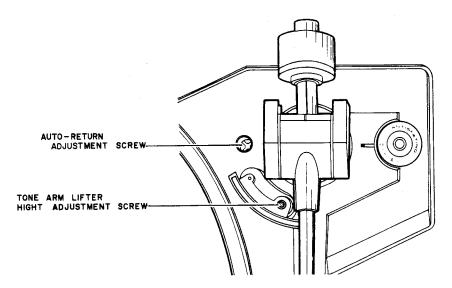


Fig. 5-3 Tone Arm Lifter Height Adjustment & Auto-Return Adjustment

With the Tone Arm in the up-position, the Stylus should be 3 to 6 mm above the surface of the record. If it is not, increase the height by adjusting the Tone

Arm Lifter Height Adjustment Screw.

Clockwise: Down
Counterclockwise: Up

### 5-4. AUTO-RETURN ADJUSTMENT (Refer to Fig. 5-3)

If the Tone Arm does not return automatically to the Tone Arm Rest at the end of the playback, or does so during playback:

- 1) Leave the Power Cord connected.
- 2) Adjust the Auto-Return Adjustment Screw.

Turn clockwise: If the Tone Arm returns before the end of record.

Turn counterclockwise: If the Tone Arm does not return at the end of record.

\* Do not turn the Screw counterclockwise too much.

### NOTE:

Akai recommends that a record be placed on the Platter and auto-return operation be carried out after each adjustment to confirm that the adjustment is successful.

### VI. ELECTRICAL ADJUSTMENT

### 6-1. SPEED ADJUSTMENT (Refer to Fig. 6-1)

- 1) Set the Speed Selector to 33-1/3 rpm.
- 2) Playback the Test Record (33-1/3 rpm, 1,000 Hz).
- 3) Adjust VR2 (3 kB) so that the speed is 1,000±5 Hz.
- 4) Set the Speed Selector to 45 rpm.
- 5) Playback the Test Record (45 rpm, 1,000 Hz).
- 6) Adjust VR1 (3 kB) so that the speed is 1,000±5 Hz.

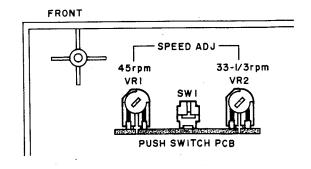
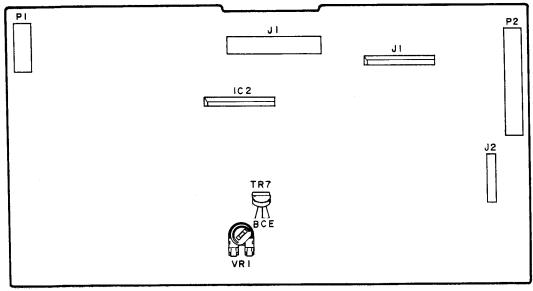


Fig. 6-1 Push Switch PCB

# 6-2. RETURN SENSOR SENSITIVITY ADJUSTMENT (Refer to Fig. 6-2)



DD SERVO PCB

Fig. 6-2 D.D. Servo PCB

- 1) Move the Tone Arm and turn on the power.
- 2) Connect the DC Voltmeter to Base of TR7.
- 3) Adjust VR1 (5 kB) so that the Base Voltage of TR7 is 2±1V.

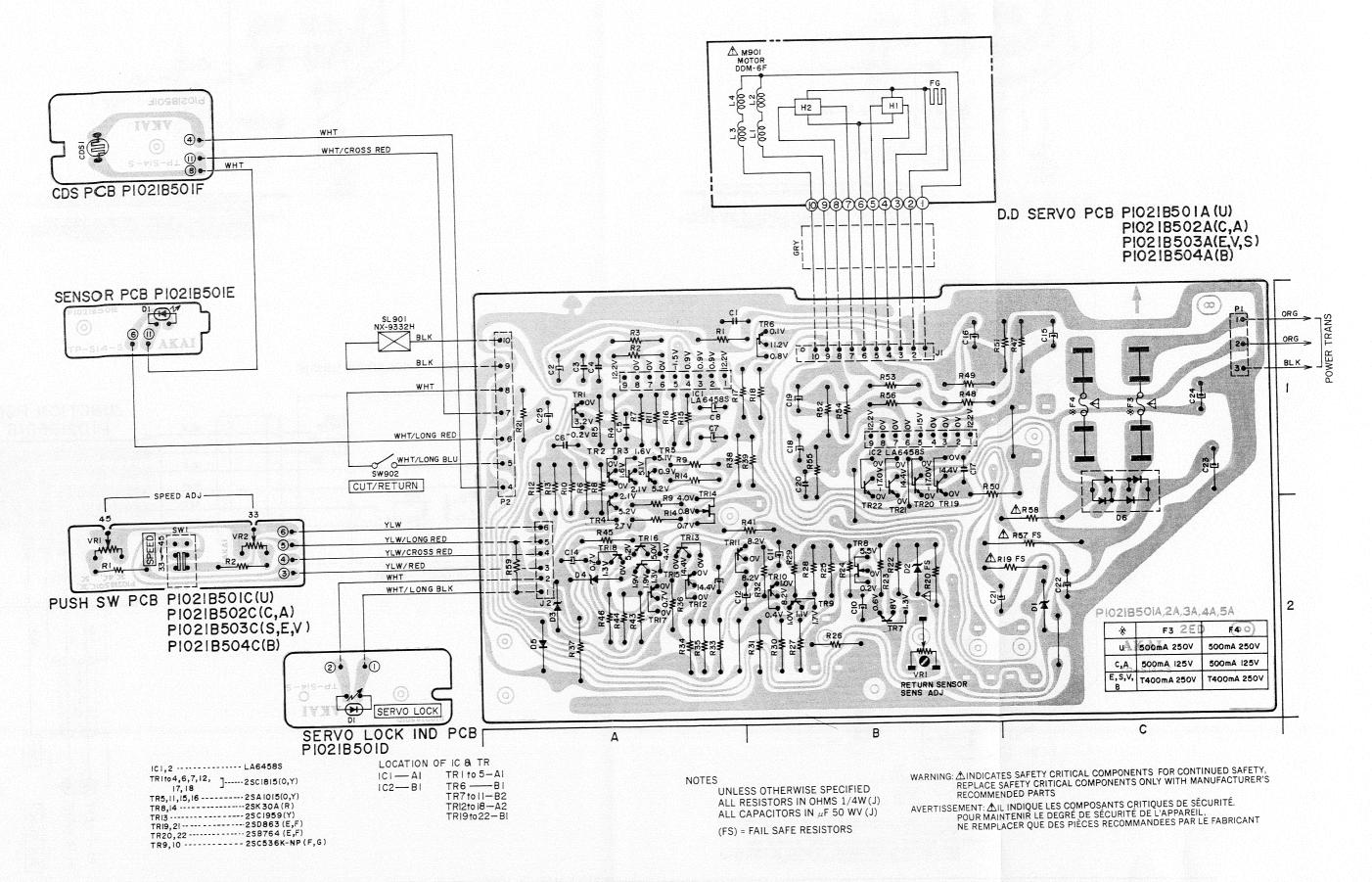
# VII. CLASSIFICATION OF VARIOUS P.C. BOARDS

### 7-1. P.C BOARD TITLES AND INDENTIFICATION NUMBERS

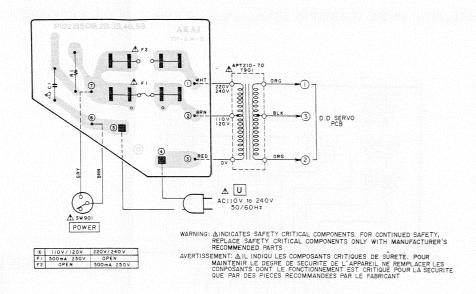
P.C BOARD T	TITLE	P.C BOARD NUMBER	NOTES
D.D. SERVO	P.C Board	P1021B501A	U
D.D. SERVO	P.C Board	P1021B502A	C , A
D.D. SERVO	P.C Board	P1021B503A	E,V,S
D.D. SERVO	P.C Board	P1021B504A	В
FUSE	P.C Board	P1021B501B	U
FUSE	P.C Board	P1021B502B	C , A
FUSE	P.C Board	P1021B503B	E, V, S
FUSE	P.C Board	P1021B504B	В
PUSH SWITCH	P.C Board	P1021B501C	U
PUSH SWITCH	P.C Board	P1021B502C	C , A
PUSH SWITCH	P.C Board	P1021B503C	E, V, S
PUSH SWITCH	P.C Board	P1021B504C	В
SERVO LOCK IN	ND P.C Board	P1021B501D	
SENSOR	P.C Board	P1021B501E	
CDS	P.C Board	P1021B501F	
JUNCTION	P.C Board	P1021B501G	

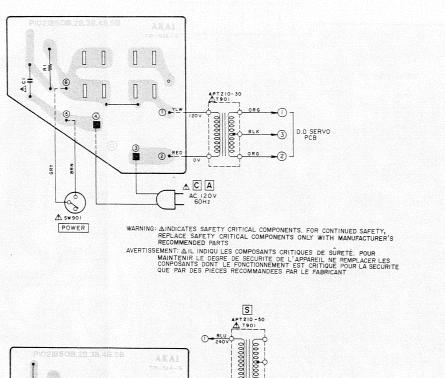
# 7-2. COMPOSITION OF VARIOUS P.C BOARDS

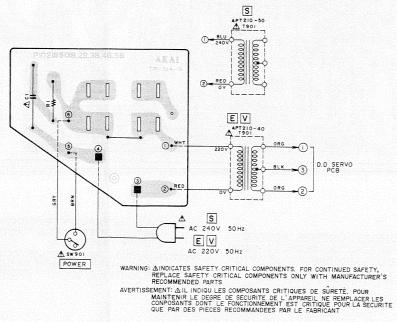
1) D.D SETRVO P.C BOARD P1021A501A to 504A, CDS P.C BOARD P1021B501F, SENSOR P.C BOARD P1021B501E, PUSH SW P.C BOARD P1021B501C to 504C, SERVO LOCK IND P.C BOARD P1021B501D

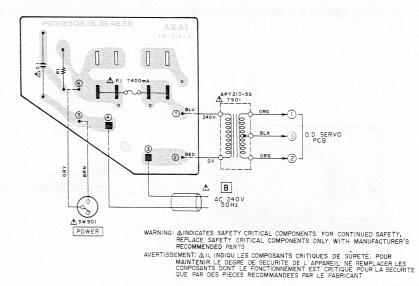


### 2) FUSE P.C BOARD P1021B501B to 504B

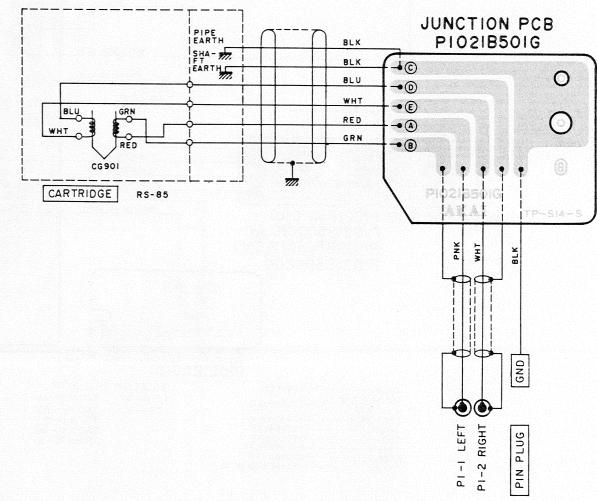








### 3) JUNCTION P.C BOARD P1021B501G



- SERVICE MANUAL AP-D2/C-

### SECTION 3

# PARTS LIST

### TABLE OF CONTENTS

MODEL AP-B1/C	
RECOMMENDED SPARE PARTS	29
1. POWER SUPPLY P.C BOARD BLOCK	29
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MODEL AP-D2/C	
RECOMMENDED SPARE PARTS	32
1. DD SERVO P.C BOARD BLOCK	32
2. ASSEMBLY BLOCK	33
3. FINALY ASSEMBLY BLOCK	34
INDEX	3:
Resistor and Capacitor which is not listed in this parts list, please refer COMMON LIST FOR SERVICE PARTS.	t.

### ATTENTION

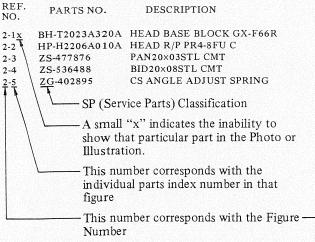
- 1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
- 2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
- 3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

### HOW TO USE THIS PARTS LIST

- 1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
- 2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for
- 3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
- 4. How to read list
  - a) Mechanism Block

b) P.C Board Block

### 2. HEAD BASE BLOCK



### 6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION			
6-1	BA-T2034A070	A PC SYS CON BLK GX-F44R			
6-IC1	EI-324536	IC HD14049BP			
6-IC2	EI-336801	IC MB8841-564M			
6-IC3	EI-331661	IC SN7405N			
6-IC4	EI-336725	IC M54527P			
6-TR1to4	ET-200985	TR 2SC2603 F,G			
6-TR5to28	ET-554657	TR 2SA733A P,Q			
6-D1	ED-318292	D SILICON H 1S2473T-77 T26			
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07			
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26			
6-X1	EI-318384	OSC X'TAL NC-18C			
1	T	3.579545MHZ			
	SP (Service Parts) Classification				
		erence numbers corresponds abol numbers of Schematic s.			

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

### WARNING

A INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS

### **AVERTISSEMENT**

A IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ **FABRICANT** 

### RECOMMENDED SPARE PARTS

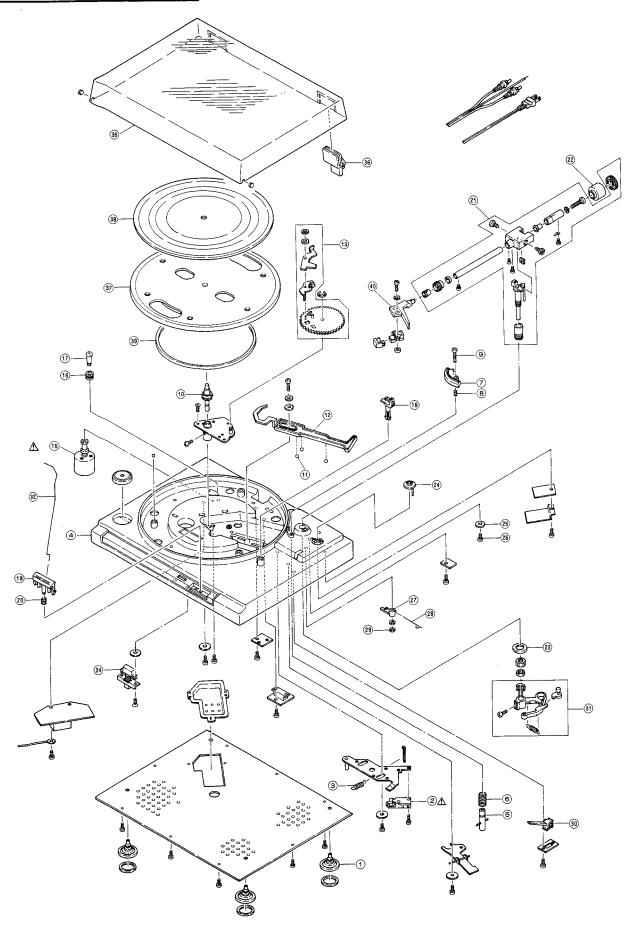
Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

REF. NO.	PARTS NO.	DESCRIPTION
1	BM-348334	⚠ MOTOR (PULLEY) BFB2R28
2	BT-348331	⚠ TRANS POWER APT-1-30 (C,A)
3	BT-348332	⚠ TRANS POWER APT-1-40 (E)
4	BT-348333	↑ TRANS POWER APT-1-50 (B,S)
5	BT-348330	⚠ TRANS POWER APT-1-70 (U)
6	ED-322238	D SILICON 1B4B41 100/1.0A
7	ES-316432	⚠ SW MICRO K2 EUC
8	ES-337898	⚠ SW SLIDE 00120163 01-2 (U)
9	ES-3482 89	SW PUSH ESB-62671
10	EV-475470	R S-FIX V V8K1-1 3P 103
11	EV-523214	R S-FIX V V8K1-1 3P 502
	MB-302866	BELT
12		
13	TP-P1034A08	OA GEAR MAIN DER AL-DI

# 1. POWER SUPPLY P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION			
	POWER SUPPLY P.C BOARD				
1-T1AU	BT-348330	↑ TRANS POWER APT-1-70 (U)			
1-T1AC	BT-348331	⚠ TRANS POWER APT-1-30			
		(C,A)			
1-T1AE	BT-348332	⚠ TRANS POWER APT-1-40 (E)			
1-T1AB	BT-348333	⚠ TRANS POWER APT-1-50			
		(B,S)			
1-D1A	ED-322238	♠ D SILICON 1B4B41 100/1.0A			
1-1AC	EW-207742	⚠ AC CORD 2 CORES VM-0238,			
		SPT-1 UC (C,A)			
1-1AE	EW-336923	$\triangle$ AC CORD 2 CORES KP-419C,			
		LTCE-2F EV (E)			
1-1AB	EW-347023	⚠ AC CORD LTBS-2F			
		42/0.15×2 B (B)			
1-1AS	EW-336924	⚠ AC CORD 2 CORES KP-560,			
		LTSA-2F S (S)			
	JUNCTION P.	C BOARD			
1-2B	EW-344164	CORD 2P AUDIO PIN X 2			
	SPEED SELE	CTOR P.C BOARD			
1-SW1C	ES-348289	SW PUSH ESB-62671 (SPEED)			
1-VR1C	EV-475470	R S-FIX V V8K1-1 3P 103			
1-VR2C	EV-523214	R S-FIX V V8K1-1 3P 502			
	POWER SELI	ECTOR P.C BOARD			
1-SW1D	ES-337898	↑ SW SLIDE 00120163 01-2 (U) (VOLTAGE CHANGE)			
1-3D	EW-374894	△ AC CORD 2 CORES  VM-0129A,VFF U/T (U)			

# FINAL ASSEMBLY BLOCK



# 2. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION	
	BACK COVER BLOCK		
2-1	SA-332577	INSULATOR	
	ELEVATION L	EVER BLOCK	
2-2	ES-316432	⚠ SW MICRO K2 EUC (SW901)	
2-3	ZG-313071	SP T1-6.3/0.5-22.4 T1-183	
	FINAL ASSEM	BLY BLOCK	
2-4	BC-348320A	CABINET	
2-4P	BC-348320B	CABINET-P	
2-4S	BC-348320C	CABINET-S (AP-B1-S)	
2-5	TP-345341	SHAFT ELEVATION	
2-6	ZG-325402	SP ELEVATION	
2-7	TP-B332568	ARM ELEVATION PART	
2-8	ZG-332548	SP PUSH (A)	
2-9	ZS-336690	PAN20×10STL BNI	
2-10	TP-B345367	CHASSIS SPINDLE PART	
2-11	MV-269965	BALL 400STL	
2-12	ML-345348	LEVER AUTO	
2-13	TP-P1034A080	A GEAR MAIN BLK AP-B1	
2-14	ZW-270101	RING E300SUP CMT	
2-15	BM-348334	⚠ MOTOR (PULLEY) BFB2R28	
2-16	MB-345351	RUBBER CUSHION	
2-17	ZS-350767	SCREW	
2-18	TP-B332571	CLAMPER ARM PART	
2-19	SK-345361A	KNOB CUT	
2-19P	SK-345361B	KNOB CUT-P	
2-20	ZG-3455358	SP PUSH KNOB CUT	
2-21	TP-711676	TONE ARM ASSY ARM-3(B)	
2-22	TP-711675	MAIN WEIGHT	
2-23	ZW-325521	M120 ×170 ×30STL CMT P100	
2-24	SK-345360A	KNOB CANCELLER	
2-24P	SK-345360B	KNOB CANCELLER-P	
2-25	ZW-345340	PW BEND	
2-26	ZS-609096	T2PAN23×0.5STL CMT	
2-27	ML-343053	LEVER CANCELLER	
2-28	ZG-343052	SP TORSION CANCELLER	
2-29	ZW-340648	RING CS190STL PKR KNOB ELEVATION	
2-30	SK-345362A	KNOB ELEVATION KNOB ELEVATION-P	
2-30P	SK-345362B	A PU PLATE BLK AP-B1	
2-31	TP-345354	LEVER REJECT	
2-32	ZG-345357	SP TORSION KNOB CUT	
2-33	SK-345363A	KNOB SWITCH	
2-34	SK-345363C	KNOB SWITCH-S	
2-34S	BC-B332582	DUST COVER PART	
2-35	TP-336361	AUTO HINGE OH-5	
2-36	TP-348321	PLATTER	
2-37	TP-348266B	TABLE SHEET B	
2-38	MB-302866	BELT	
2-39 2-40	TP-711673	HEAD SHELL HS-1	
4-40	11 . 110.0		

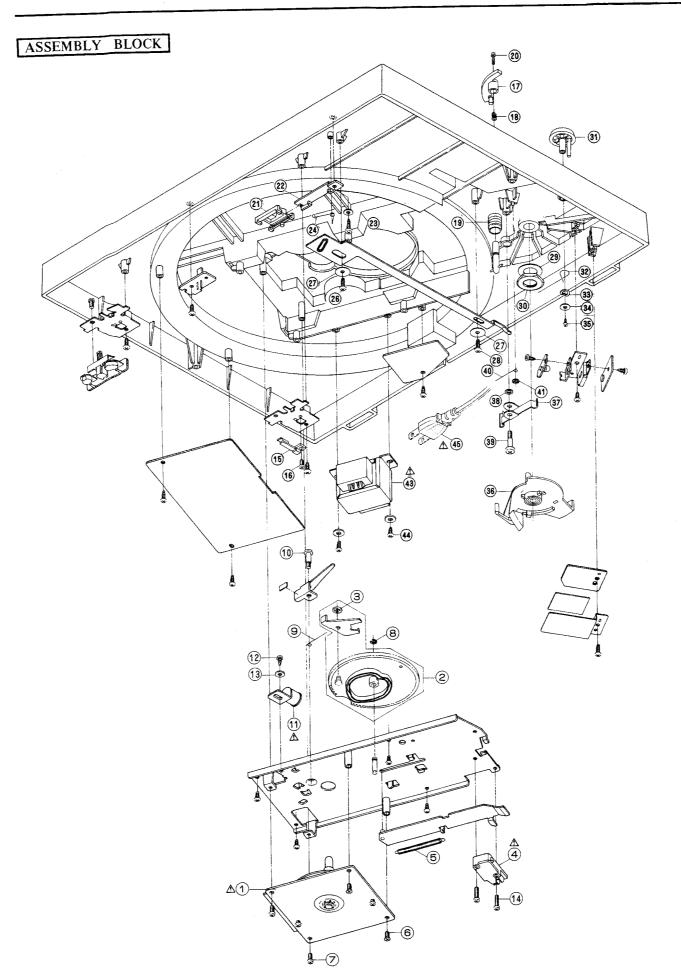
### RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

REF. NO.	PARTS NO.	DESCRIPTION
1	BM-P1021A060A	⚠ MOTOR BLK AP-D210
2	BT-336790	↑ TRANS POWER APT2 10-30 (C,A)
3	BT-336791	⚠ TRANS POWER APT210-40 (E)
4	BT-336815	⚠ TRANS POWER APT2 10-50 (B,S)
5	BT-336789	△ TRANS POWER APT2 10-70 (U)
6	ED-322238	△ D SILICON 1B4B41 100/1.0A
7	ED-322773	D LED SLP-255D-01 GRN
8	ED-325341	D LED TLR103 RED
9	ED-321115	D SILICON 1S1588LB-5 F10
10	ED-336823	D ZENER H 05Z4.7 X
11	ED-324194	D ZENER H 05Z5.1 X
12	ED-323535	D ZENER H 05Z8.2 X
13	EF-300599	↑ FUSE FST3100 T 250V 0.40A
		(F1) (B)
14	EF-300599	↑ FUSE FST3100 T 250V 0.40A
		(F4) (E,V,S,B)
-15	EF-300599	⚠ FUSE FST3100 T 250V 0.40A
		(F3) (E,V,S,B)
16	EF-327103	⚠ FUSE TSC A 250V 0.50A (F1) (U)
17	EF-327103	⚠ FUSE TSC A 250V 0.50A (F2) (U)
18	EF-327103	<b>△</b> FUSE TSC A 250V 0.50A (F3) (U)
19	EF-327103	△ FUSE TSC A 250V 0.50A (F4) (U)
20	EF-309390	△ FUSE TSC 125V 0.50A (F4) (A,C)
21	EF-309390	△ FUSE TSC 125V 0.50A (F3) (A,C)
22	EI-336761	IC LA6458S
23	EP-336821	⚠ SOLENOID NX-9332H
24	ES-336814	SW LEAF MSW-1150NBK 01-1 N0
		(SW902)
25	ES-325488	SW MICRO K1 UCE (SW901)
26	ES-307576	SW PUSH SUJ12 2-02-02N
27	ET-318237	↑ TR 2SB764 E,F
28	ET-325482	↑ TR 2SC1959 Y
29	ET-318239	<b>↑</b> TR 2SD863 E,F
30	ET-336819	PHOTO SENSOR MKY-76C348/A.K
31	ET-336816	TR FET 2SK30A R
32	ET-325501	TR 2SA1015 O,Y
33	ET-306705	TR 2SC1815 O,Y
34	ET-316643	TR 2SC536K-NP F,G
35	EV-315412	R S-FIX H D8 3P 502
36	EV-341246	R S-FIX V TM8KH1-1S 3P 0.50W 302

### 1. DD SERVO P.C BOARD BLOCK

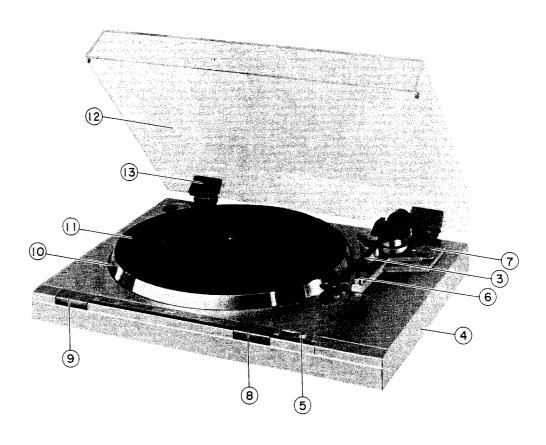
1. DU SE	KVO I.C BC	DARD BLOCK
REF. NO.	PARTS NO.	DESCRIPTION
1-1A 1-1E		PC DD SERVO BLK AP-D210(A) PC DD SERVO BLK AP-D210 (E) (E,V,S)
1-1U	BA-P1021A140C	PC DD SERVO BLK AP-D210- C(U)
1-1B	BA-P1021A140F	PC DD SERVO BLK AP-D210- C(B)
1-1C	BA-P1021A140F	PC DD SERVO BLK AP-D210- C(C)
	DD SERVO P.C	BOARD
1-IC1A	EI-336761	IC LA6458S
1-IC2A	EI-336761 .	IC LA6458S
1-TR1A to 4A	AET-306705	TR 2SC1815 O,Y
	ET-325501	TR 2SA1015 O,Y
1-TR6A,7A		TR 2SC1815 O,Y
1-TR8A	ET-336816	TR FET 2SK30A R
1-TR9A,10A		TR 2SC536K-NP F,G
1-TR11A		TR 2SA1015 O,Y
1-TR12A 1-TR13A	ET-306705 ET-325482	TR 2SC1815 O,Y △ TR 2SC1959 Y
1-TR13A 1-TR14A	ET-325462 ET-336816	TR FET 2SK30A R
	A ET-325501	TR 2SA1015 O,Y
1-TR17A,18A		TR 2SC1815 O,Y
1-TR19A	ET-318239	△ TR 2SD863 E,F
1-TR20A	ET-318237	⚠ TR 2SB764 E,F
1-TR21A	ET-318239	<b>⚠</b> TR 2SD863 E,F
1-TR22A	ET-318237	<b>⚠</b> TR 2SB764 E,F
1-D1A	ED-324194	D ZENER H 05Z5.1 X
1-D2A	ED-323535	D ZENER H 05Z8.2 X
1-D3A	ED-324194	D ZENER H 05Z5.1 X
1-D4A 1-D5A	ED-336823 ED-321115	D ZENER H 05Z4.7 X D SILICON H 1S1588LB-5 F10
1-D5A 1-D6A	ED-321113 ED-322238	D SILICON 1151588LB-5 F10 D SILICON 1B4B41 100/1.0A
1-VR1A	EV-315412	R S-FIX H D8 3P 502
1-R8A	ER-336820	⚠ R MF H F10 1/4W 4703F
1-R12A	ER-318319	△ R MF H F10 1/4W 1002F
1-R 13A	ER-318317	⚠ R MF H F10 1/4W 8201F
1-R19A	ER-308849	⚠ R CB H S12 FS RD 1/4W 221J
1-R20A	ER-308873	A R CB H S12 FS RD 1/4W 151J
1-R37A	ER-308849	A R CB H S12 FS RD 1/4W 221J
1-R57A 1-R58A	ER-304256 ER-308849	⚠ R OMF H 2W 560J ⚠ R CB H S12 FS RD 1/4W 221J
1-K56A 1-C6A	EC-309115	C COMP V AWS 104J 50DC
1-F3AA	EF-309390	△ FUSE TSC 125V 0.50A (A,C)
1-F3AE	EF-300599	Δ FUSE FST3100 T 250V 0.40A (E,V,S,B)
1-F3AU	EF-327103	⚠ FUSE TSC A 250V 0.50A (U)
1-F4AA	EF-309390	△ FUSE TSC 125V 0.50A (A,C)
1-F4AE	EF-300599	↑ FUSE FST3100 T 250V 0.40A (E,V,S,B)
1-F4AU	EF-327103	△ FUSE TSC A 250V 0.50A (U)
	FUSE P.C BOAL	
1-C1BA	EC-314688	↑ C CE V FZ 103P 125AC (A,C)
1-C1BE	EC-330308	↑ C MMY V ECQUF 103M 250AC (E,V,S,B)
1-C1BU	EC-320548	△ C CE V F 103Z 250AC (U)
1-F1BU	EF-327103	↑ FUSE TSC A 250V 0.50A (U)
1-F1BB	EF-300599	⚠ FUSE FST3100 T 250V 0.40A (B)
1-F2BU	EF-327103	FUSE TSC A 250V 0.50A (U)
1-SW1C	PUSH SWITCH ES-307576	SW PUSH SUJ12 2-02-02N
1-3W1C 1-VR1C,2C	EV-341246	R S-FIX V TM8KH1-1S 3P 0.50W
1 1110,20	21 311210	302
1-R1C	ER-318318	△ R MF H F10 1/4W 9101F
1-R2C	ER-318337	⚠ R MF H F10 1/4W 6801F
	SERVO LOCK	LED P.C BOARD
1-D10	ED-322773	D LED SLP-255D-01 GRN
1-D1E	ED-325341	D LED TLR103 RED
1-CDS1F	CDS. P.C BOAR ET-336819	RD PHOTO SENSOR MKY-76C348/A.K
	INTERMEDIAT	
1-P1G	EW-344164	CORD 2P AUDIO PIN X 2



# 2. ASSEMBLY BLOCK

EF. NO.	PARTS NO.	DESCRIPTION
-1	MOTOR BLOCK BM-P1021A060A	C A企MOTOR BLK AP-D210
	MAIN GEAR BI	OCK
	TP-P102 1A070A	
-2		RING CS280STL PKR
:-3	211-033103	Mile Sozooza a ini
2-4	SW MICRO BLO ES-325488	OCK
	CHASSIS MAIN	BLOCK
2-5	ZG-313008	SP T1-4.0/0.4-50.0 T1-121
2-6	ZS-414033	CTS30×08STL CMT
2-7	ZS-666336	T2PAN30×08STL CMT
2-8	ZW-290283	RING U 285SUP CMT
2-9	ZG-332558	SP TOSION REJECT
2-10	MS-302757	STOPPER SHAFT
2-11	EP-336821	⚠ SOLENOID NX-9332H
2-12	ZS-343165	CT BR30×06STL CMT
2-13	ZW-261382	PW 31 × 080 × 030 ST L
2-14U	ZS-119670	PAN30 ×12STL CMT (U,C,A)
2-14E	ZS-348294	$PAN30 \times 12GL-G (E,B,S,V)$
	SW LEAF BLO	CK
2-15	ES-336814	SW LEAF MSW-1150NBK 01-1 NO (SW902)
2-16	ZS-468101	T2PAN26×06STL CMT
	ASSEMBLY BI	LOCK
2-17	TP-B332568	ARM ELEVATION PART
2-17	ZG-332548	SP PUSH (A)
2-19	ZG-325402	SP ELEVATION
2-20	ZS-572804	PAN20×10STL NI3
2-21	SK-332583D	KNOB ELEVATION (B)
2-21P	SK-332583C	KNOB ELEVATION (B)-P
2-22	SK-332584D	GUIDE KNOB (B)
2-22P	SK-332584C	GUIDE KNOB (B)-P
2-23	ZS-310984	PT BR30 x08STL CMT
2-24	ZG-332549	SP TORSION STOPPER
2-25	ZW-324147	PW31 ×130 ×100 NY L
2-26	ZS-323993	PT RB3010STL CMT
2-27	ZS-609131	T2PAN30×12STL CMT
2-28	ZW-259481	PW31 x 080 x 030 NYL
2-29	ZW-336398	PW130 ×200 × 050STL CMT
2-30	ZW-325521	N120×170×30STL CMT P100 KNOB CANCELLER (C)
2-31	SK-332551E	KNOB CANCELLER (B)-P
2-31P	SK-332551D ZG-332552A	SP TORSION CANCELLER (A)
2-32	ZW-315478	WAVE WASHER D5 SUS
2-33	ZW-429120	PW23×090×050STL CMT
2-34 2-35	ZS-669104	T2PAN23×06STL CMT
2-36	TP-P1021A09	0A LEVER PU BLK AP-D210
2-30	TP-332559	LEVER BRAKE
2-38	ZW-616004	PW31 x 080 x 100STL CMT
2-39	ZS-325426	TAPPING ROLLER SCREW
2-40	ZG-332558B	SP TORSION REJECT (B)
2-41	ZW-340648	RING CS190STL PKR
2-42X	ZG-325402	SP ELEVATION
2-43U	BT-336789	$\triangle$ TRANS POWER APT210-70(U)
2-43C	BT-336790	⚠ TRANS POWER APT210-30
	DT	(C,A)
2-43E	BT-336791	↑ TRANS POWER APT210-40 (E) ↑ TRANS POWER APT210-50
2-43B	BT-336815	(B,S)
2-44	ZS-310984	PT BR 30 × 08STL CMT
2-44 2-45U	EW-306428	⚠ AC CORD 2 CORES KP-205A,
2-450	555425	VFF U/T (U)
2-45C	EW-305691	⚠ AC CORD 2 CORES KP-8,
		SPT-1 UC (C,A)
2-45E	EW-313882	AC CORD 2 CORES KP-419C,
	T31/ 04#000	LTCE-2F E (E,V)
2-45B	EW-347023	⚠ AC CORD LTBS-2F 42/0.15 ×2 B (B)
2-45S	EW-201515	⚠ AC CORD 2 CORES KP-560,
	. =	LTSA-2F S (S)

# FINAL ASSEMBLY BLOCK



# 3. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
	COVER BOTT	OM BLOCK
3-1 x	SP-332564	COVER BOTTOM
3-2x	SA-332577	INSULATOR
	TONE ARM B	LOCK
3-3	TP-336839	TONE ARM W/SHELL ARM-21
	FINAL ASSEM	IBLY BLOCK
3-4	BC-332581C	
3-4P	BC-332581D	
3-5	SK-332583D	. ,
3-5P	SK-332583C	
3-6	TP-B332571	
3-7	SK-332551E	KNOB CANCELLER (C)
3-7P	SK-332551D	KNOB CANCELLER (B)-P
3-8	SK-332560G	KNOB SW (B-2)
3-8P	SK-332560H	9EK03SW (B-2)-P
3-9	SK-332560E	KNOB SW (A-2)
3-9P	SK-332560F	KNOB SW (A-2)-P
3-10	TP-B332578	PLATTER PART
3-11	TP-332566A	TABLE SHEET (A)
3-12	BC-B332582	DUST COVER PART
3-13	TP-336361	AUTO HINGE OH-5

# INDEX

# 1. MODEL AP-B1/C

PARTS NO.	REF. NO.	PARTS NO.	REF, NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF, NO.
BC-B332582 BC-348320A BC-348320B BC-348320C	2-35 2-4 2-4P 2-4S								
BM-348334 BT-348330	2-15 1-T1AU								
BT-348331 BT-348332	1-T1AC 1-T1AE 1-T1AB								
BT-348333 ED-322238	1-D1A								
ES-316432 ES-337898	2-2 1-SW1D								
ES-348289 EV-475470	1-SW1C 1-VR1C								
EV-523214	1-VR2C								
EW-207742	1-1AC 1-1AE								
EW-336923 EW-336924	1-1AE								
EW-344164	1-2B								
EW-347023	1-1AB								
EW-374894 MB-302866	1-3D 2-39								
MB-345351	2-16								
ML-343053 ML-345348	2-27 2-12								
MV-269965	2-11								
SA-332577	2-1								
SK-345360A SK-345360B	2-24 2-24P								
SK-345361A	2-19								
SK-345361B	2-19P 2-30								
SK-345362A SK-345362B	2-30P								
SK-345363A	2-34								
SK-345363C TP-B332568	2-34S 2-7								
TP-B332571	2-18								
TP-B345367	2-10								
TP-P1034A040 TP-P1034A080						:			
TP-336361 TP-345341	2-36 2-5								
TP-345354	2-32								
TP-348266B TP-348321	2-38 2-37								
TP-711673	2-40								
TP-711675	2-22								
TP-711676 ZG-313071	2-21 2-3							1	
ZG-325402	2-6								
ZG-332548 ZG-343052	2-8 2-28								
ZG-345357	2-33								
ZG-345358	2-20								
ZS-336690 ZS-350767	2-9 2-17								
ZS-609096	2-26								
ZW-270101	2-14 2-23								
ZW-325521 ZW-340648	2-23								
ZW-345340	2-25								<u> </u>

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# 2. MODEL AP-D2/C

PAF										
	RTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
					<del></del>					
BA-P	1021A140A		ET-336816	1-TR8A						
BA-F	P1021A140B	1-1 E	ET-336816	1-TR 14A			1			
BA-F	P1021A140C	1-1 U	ET-336819	1-CDS1F						
BA-F	P1021A140E	1-1B	EV-315412	1-VR1A						
BA-F	P1021A140F	1-1 C	EV-341246	1-VR1C						
BC-F	B332582	3-12	EV-341246	1-VR2C						
BC-3	332581C	3-4	EW-201515	2-45S						
i	332581D	3-4P	EW-305691	2-45C						
1	P1021A060A	2-1	EW-306428	2-45U						
1	336789	2-43U	EW-313882	2-45E						
			EW-344164	1-P1G						i
BT-	336790	2-43C		2-45B						
	336791	2-43E	MS-302757	2-10						
BT-	336815	2-43B	SA-332577	3-2 x						
1	309115	1-C6A		2-31P						
	314688	1-C 1BA	SK-332551D		,				1	
	320548	1-C 1BU	SK-332551E							
	330308	1-C 1BE	SK-332551E							
	321115	1-D5A	SK-332560E	3-9						
	322238	1-D6A	SK-332560F	3-9P						
1	322773	1-D1D	DI 3323001	5 / .						
			SK-332560G	3-8						
ED-	323535	1-D2A	SK-332560H				1			
	324194	1-D1A	SK-332583C							
	324194	1-D 3A		3-5P						
	-325341	1-D1E	SK-332583D							
	-336823	1-D4A	SK-332583D				1			
	300599	1-F3AE	SK-332584C							
	300599	1-F4AE	SK-332584D							
	300599	1-F1BB	SP-332564	3-1x						
L.	309399	1-F3AA	TP-B332568	2-17						
	309390	1-F4AA	11-0332300	2-17						
LL	.309390	1-1-1111	TP-B332571	3-6					ļ	
FF	-327103	1-F3AU	TP-B332578	3-10						
	-327103	1-F4AU	TP-P1021A070A							
	-327103	1-F1BU	1							
	-327103	1-F2BU	TP-P1021A090						}	
	336761	1-IC1A	TP-332559	2-37						
	336761	1-IC2A	TP-332566A						ĺ	
	336821	2-11	TP-336361	3-13						
	-304256	1-R57A	TP-336839	3-3						
	-308849	1-R 19A	ZG-313008	2-5					1	
	-308849	1-R37A	ZG-325402	2-19						
	3000.7		ZG-325402	2-42 x						
ER	-308849	1-R58A	ZG-323402 ZG-332548	2-18						
	-308873	1-R20A	ZG-332549	2-16						
	-318317	1-R 13A	ZG-332552A		Ì				1	
	-318318	1-R1C	ZG-332558	2-9					1	
	-318319	1-R 12A	ZG-332558B							
ER	-318337	1-R2C	ZS-310984	2-23	-					
ER	-336820	1-R8A	ZS-310984	2-44						
	-307576	1-SW1C	ZS-323993	2-26						
ES-	-325488	2-4	ZS-325426	2-39	ļ					
	-336814	2-15			1		1		]	
1			ZS-343165	2-12					1	
ET	-306705	1-TR1A	ZS-348294	2-14E						
	-306705	1-TR2A	ZS-414033	2-6					•	
ET	-306705	1-TR3A	ZS-419670	2-14U					1	
ET	-306705	1-TR4A	ZS-468101	2-16					1	
	-306705	1-TR6A	ZS-572804	2-20					1	
	-306705	1-TR7A	ZS-609131	2-27					1	
ET	-306705	1-TR12A		2-7	1					
ET	-306705	1-TR 17A		2-35						
	-306705	1-TR18A		2-28						
	-316643	1-TR9A							1	
			ZW-261382	1-13						
ET	-316643	1-TR10A	ZW-290283	2-8						
	-318237	1-TR20A	ZW-315478	2-33						
ET	-318237	1-TR22A	ZW-324147	2-25						
ET	-318239	1-TR19A		2-30			1			
ET	-318239	1-TR21A		2-29					1	
ET	-325482	1-TR 13A		2-41					1	
ET	-325501	1-TR5A	ZW-429120	2-34						
ET	-325501	1-TR11A	ZW-616004	2-38						
ET	-325501	1-TR15A		2-3						
ET	-325501	1-TR 16A								
L										

